

Application No. 10/659,494
Response to Office Action

Customer No. 01933

Listing of Claims:

1. (Currently Amended) An ink jet head comprising:

a plurality of pressure chambers arranged in parallel, each of which is defined by side walls and communicates with an ink supplying path, each chamber being defined by side walls, wherein
5 the plurality of pressure chambers comprise a plurality of pressure chambers in a printing region and at least one pressure chamber in a non-printing region;

an ejecting nozzle provided at one end of each of the pressure chamber chambers in the printing region;

10 pressure means for varying a capacity in each of the plurality of pressure chamber according to chambers in accordance with a respective driving signal;

a dummy nozzle provided at one end of the said at least one pressure chamber in the non-printing region, and has a shape set
15 to have said dummy nozzle having (i) a shape for preventing ink from being ejected therefrom which includes an aperture area at the an ink ejecting side thereof which is greater than an aperture area of the ejecting nozzle at an ink ejecting side thereof, and to have (ii) a flow impedance which is substantially
20 the same as that a flow impedance of the ejecting nozzle, said flow impedance varying in accordance with both an inertial

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resistance of ink in the nozzle and a viscosity resistance of ink in the nozzle; and

25 head driving means that selectively varies the capacity in the pressure ~~chamber~~ chambers in the printing region by applying ~~the respective driving signal~~ signals to the pressure means, to eject ink from the ejecting nozzle; [[,]]

30 wherein [[,]] when the head driving means selectively varying varies the capacity in the a pressure chamber of the plurality of pressure chambers in the printing region which is positioned at an end of the printing region, the head driving means selectively simultaneously varies the capacity in the a corresponding said at least one pressure chamber in the non-printing region simultaneously by applying a driving signal
35 to the pressure means.

2. (Currently Amended) An ink jet head according to claim 1, wherein ~~the an~~ an aperture diameter of the ejecting nozzle at ~~the side of the a~~ a pressure chamber side thereof is ~~set~~ greater than an aperture diameter at the ~~external ink ejecting~~ side
5 thereof, while and an aperture diameter of the dummy nozzle at ~~the side of the a~~ a pressure chamber side thereof is ~~set~~ smaller than an aperture diameter at the ink ejecting side thereof.

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3. (Currently Amended) An ink jet head according to claim 2, wherein the ejecting nozzle and the dummy nozzle ~~are formed to each~~ have ~~a~~ symmetrical ~~shape~~ shapes with respect to ~~the an~~ ejecting direction of an ink droplet.

4. (Currently Amended) An ink jet printer comprising:

(i) an ink jet head ~~including~~ comprising:

a plurality of pressure chambers arranged in parallel, each of which is defined by side walls and communicates with an ink supplying path, ~~each chamber being defined by side walls,~~
5 wherein the plurality of pressure chambers comprise a plurality of pressure chambers in a printing region and at least one pressure chamber in a non-printing region;

an ejecting nozzle provided at one end of each of the
10 ~~pressure chamber~~ chambers in the printing region;

pressure means for varying a capacity in each of the plurality of pressure ~~chamber according to~~ chambers in accordance with a respective driving signal;

a dummy nozzle provided at one end of ~~the~~ said at least
15 one pressure chamber in the non-printing region, ~~and has a shape set to have said dummy nozzle having (i) a shape for preventing ink from being ejected therefrom which includes an aperture area at the an ink ejecting side thereof which is greater than an aperture area of the ejecting nozzle at an ink ejecting side~~

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20 ~~thereof, and to have~~ (ii) a flow impedance which is substantially
the same as that a flow impedance of the ejecting nozzle, said
flow impedance varying in accordance with both an inertial
resistance of ink in the nozzle and a viscosity resistance of ink
in the nozzle; and

25 head driving means that selectively varies the capacity
in the pressure ~~chamber~~ chambers in the printing region by
applying the driving signal to the pressure means, to eject ink
from the ejecting nozzle; [[,]]

wherein [[,]] when the head driving means selectively
30 varying varies the capacity in the a pressure chamber of the
plurality of pressure chambers in the printing region which
is positioned at an end of the printing region, the head driving
means selectively simultaneously varies the capacity in the a
corresponding said at least one pressure chamber in the
35 non-printing region simultaneously by applying a driving signal
to the pressure means;

(ii) moving means that for relatively moves moving the ink
jet head ~~and~~ with respect to a recording medium such that the
recording medium passes through a print position opposite to the
40 ejecting nozzle; and

(iii) drive control means for driving the pressure means and
the head driving means ~~based upon a driving signal~~ in accordance
with image data.

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5. (Currently Amended) An ink jet printer according to claim 4, wherein the an aperture diameter of the ejecting nozzle at ~~the side of the~~ a pressure chamber side thereof is ~~set~~ greater than an aperture diameter at the ink ~~ejecting~~ ejecting side thereof, while and an aperture diameter of the dummy nozzle at ~~the side of the~~ a pressure chamber side thereof is ~~set~~ smaller than an aperture diameter at the ink ejecting side thereof.

6. (Currently Amended) An ink jet printer according to claim 5, wherein the ejecting nozzle and the dummy nozzle are formed to each have ~~a~~ symmetrical ~~shape~~ shapes with respect to the an ejecting direction of an ink droplet.